



IMMEDIATE AND SUSTAINABLE IMPROVEMENT OF EMOTIONAL COMPETENCE IN PHYSICAL EDUCATION

Claudia Reidick¹ | Katharina Freudenberg¹ | Andrea Pieter² | * Michael Fröhlich¹

¹ University of Kaiserslautern, Department of Sport Science. (*Corresponding Author)

² University of Applied Science for Prevention and Public Health.

ABSTRACT

Background: Emotions and emotional competence are increasingly gaining importance, which becomes especially relevant due to their association with psychological and psychosomatic diseases, as well as performance-related aspects, such as motivation and cognition.

Goal and Methods: This study investigated the extent to which a body-related program can lead to immediate or sustainable improvement in emotional competence in physical education. Overall, the data of 44 female students was collected at three different points in time based on the Emotional Competence Questionnaires (EKF) to measure their development.

Results: The results show immediate and sustainable positive effects of the body-related program on emotion regulation abilities, and long-term positive effects on emotional competencies as a whole. It is particularly recommended to rethink and revise the organization of the program's time management in order to increase efficiency.

KEYWORDS: Emotions, Physical education, Emotional competence, Emotion regulation, Prevention, Awareness.

Introduction

According to Schlack, Kurth and Hölling (2008), social and medical progress in Germany has brought about a change of perspective concerning the range of diseases from acute to chronic illness and from somatic to psychological disorders. Currently, for example, approximately 22% of children and adolescents in Germany increasingly exhibit psychological anomalies (Ravens-Sieberger, Wille, Bettge, & Erhart, 2007). The "high prevalence of functional inhibitions and psychosocial strain of children and their families due to (psychological) [...] anomalies" (Hölling, Schlack, Petermann, Ravens-Sieberger, & Mauz, 2014) should doubtless give rise to increased preventive effort, especially during sensitive development phases. Despite, or maybe even because of this development, current research effort shows a strong correlation between emotional competence and psychological health.

Emotions are to be considered pointers, which both warn of dangers and significantly impact the human motivational system. They influence affects and produce cognitive processes to achieve an assessment and interpretation of a situation (Carlson, 2004; Seel & Hanke, 2015). In addition to psychophysiological, cognitive, expressive, and volitional components, emotions are generally ascribed the dimension of conscious experience in the form of recognition of feelings and their interpretation (Gerrig & Zimbardo, 2014; Mees, 2006).

Looking at emotions and their interaction with motivation and volition in a school context, the association of positive emotions with school as an institution over a long-term period seems to boost learning success and performance increase (Hascher, 2005) and to influence performance at school (Pekrun, Goetz, & Titz, 2002). Furthermore, effective emotion regulation, i.e., targeted modification of emotional reaction can have a positive impact on learning and performance (Götz, Frenzel, Pekrun, & Hall, 2006; Pekrun et al., 2002).

Numerous studies dealt with the construct of emotion-related skills (Marées & Petermann, 2009; Petermann & Kullik, 2011; Schick & Cierpka, 2003). Emotional competence does not only include cognitive, emotion-related skills (perceive, recognize, understand feelings, changes of perspective), but also adequate regulation and expression of emotions (Rindermann, 2009). To keep the overlap with social skills at a minimum, it is worth applying a separate view according to Rindermann (2009) to the following four areas in terms of emotional competence: (1) recognition of one's own feelings, (2) recognition of others' feelings, (3) regulation of one's own feelings, and (4) emotional expressiveness.

The promotion of emotion-related skills increasingly becomes part of therapeutic and pedagogic interventions in the form of accompanying or prevention measures to improve social-cognitive and emotional competence (Webster-Stratton, Reid, & Beauchaine, 2011). Pedagogic prevention programs are either targeting competence or development. Competence oriented interventions usually focus on health-related aspects and the promotion of adequate social behavior by systematically developing social-motional skills. In contrast, development-oriented interventions focus on development-related tasks in the individual phases of life and include the emotional, social, linguistic, and physical development status of

the person (Seel & Hanke, 2015).

Berking, Wuppermann, Reichardt, Pejic, Dippel and Znoj (2008) were able to prove that the promotion of emotional regulation abilities positively impacts therapy results in the case of psychological disorders. However, emotions do not have an effect only on cognition and behavior, but also on physiological processes (Fox, 2008). The perception of physical signals is an essential precondition for the recognition of one's own emotions and for emotional competence as a whole. Especially physical perception plays a key role in the development of emotional skills (Lammers, 2011). The question arises to what extent physical education is suitable to implement intervention programs and promote emotional competence in children and adolescents. The objective of this contribution is to analyze the effects of a body-related program to promote emotional competence in physical education.

Materials and Methods

Study design

The study is based on a quasi-experimental pre-post test plan with a follow-up measurement. The intervention consisted of an elaborated therapeutic program applied in a clinical context and adapted to the framework conditions of physical education. In the clinical context, the intervention program includes the areas of: body awareness, interpersonal effectiveness, distress tolerance, emotion regulation, aggression, and dissociation. Only dissociation was neglected because it is a symptom of psychological disorders and requires corresponding treatment. Instead, a separate elaboration of the mindfulness theory was developed because as a basis of any type of conscious sensory perception, it is ascribed a special relevance pertaining to the perception of physical responses and signals.

Since the tests were conducted during daily school routine, we examined two classes, i.e., naturally existing groups. Therefore, it was impossible to randomly assign the test subjects to the experimental group (EG) and control group (CG). The test design is thus to be interpreted as quasi-experimental. The EG performed a five-week program to promote emotional competence, while the CG participated in regular physical education classes. "Emotional competence" was examined in a pre-test before the program (the initial value was determined for the test persons), after the program (post-test), and in a follow-up test six weeks after the program in order to determine any sustainable effects (compare fig. 1).

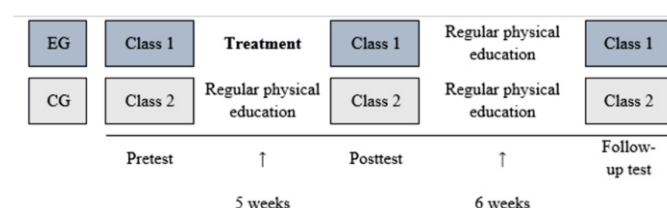


Fig. 1: Quasi-experimental test design with repeated measurement

Examination procedure and program

A total of 47 female students in the eighth grade with four classes at a high school with mono-educative physical education participated in the study. The students were excluded from the evaluation if they did not participate in one of the test dates or if they were absent at more than one treatment unit during the period of examination. Considering the exclusion criteria, the results of 44 test subjects were included in the statistical evaluation (EG: 23, CG: 21). The average age of the students at the time of testing was 13.34 ± 0.52 years (EG: 13.30 ± 0.56 and CG: 13.33 ± 0.56).

The students' parents were informed by letter about the study contents and the anonymity of the study in particular. The examination was approved by the school management and carried out from November 2014 to January 2015. The program for the experimental group was conducted between fall and Christmas vacations. Emotional competence was determined based on the Rindermann (2009) self-assessment scale of the "Emotional skills and competence questionnaire" (ESCQ) in the form of a group test under standardized and anonymized conditions. This is a validated paper-pencil procedure to record the characteristic of "emotional competence" for adolescents (from eighth grade) and adults. Emotional competence was operationalized by the four dimensions (1) recognition of one's own feelings (OwnEm), (2) recognition of others' feelings (OthEm), (3) regulation of one's own feelings (RegEm), and (4) expression of feelings as emotional expressiveness (ExpEm). The individual characteristics in the ESCQ were either collected by means of a self-assessment scale or an external assessment questionnaire. For this evaluation of the intervention to promote emotional competence, the self-assessment scale was used because subjectively perceptible effects were pursued. The ESCQ Likert Scales comprised a total of 62 items (1 = "does not apply at all to 5 "fully applies"), with 15 items listed for the generation of a measurement value relating to OwnEm, 17 relating to the OthEm skill, 13 relating to RegEm, and 17 relating to ExpEm. The items' reliability with Cronbach's Alpha > 0.88 ranged in an area that could be termed as "good".

The physical skill related program to promote emotional competence took place over a period of five weeks with one unit of 90 minutes per week. The units of the emotional competence program addressed the topics of interpersonal effectiveness, mindfulness and body awareness, distress tolerance, emotion regulation, and aggression. These were prepared in theory and implemented in practice. The content of the theoretical introduction was based on the therapists' manual by Bohus and Wolf-Arehult (2014), whereas the practical exercises were mostly based on the die DBT-A physical skills (Fleischhaker, Sixt, & Schulz, 2010).

Statistics

For the individual main scales and for the total value of emotional competence, the descriptive parameters were calculated based on the raw values. The raw values were evaluated based on the manual by Rindermann (2009), then z-transformed, then averaged. To answer the question to what extent participation in the program leads to an immediate and/or sustainable improvement of emotional competence, a variance analysis with repeated measurement was performed. The normal distribution assumption was checked by means of the Kolmogoroff-Smirnov tests, and group variance homogeneity was verified using Levene's test. Using the Mauchly test, the sphericity assumption was violated for the RegEm main scale, which is why the Box correction was applied. The statistical evaluation of data was carried out using IBM SPSS Statistics 22. The significance level was specified to be $\alpha = 0.05$.

Results

Table 1 presents the descriptive values for the four dimensions of emotional competence for pre-test, post-test, and follow-up test. The variance analysis with repeated measurement showed that no significant differences between the groups exist (table 2).

Tab. 1: Emotional competence in the four dimensions and in the overall value over the times of measurement in dependence of group association

Recognition of one's own feelings (OwnEm)								
Group	Pretest			Posttest			Follow-up-Test	
	n	MW	SD	n	MW	SD	n	SD
EG	24	-0.16	0.96	24	0.00	0.83	23	-0.12 1.30
CG	23	-0.10	0.94	23	-0.07	1.17	21	-0.12 1.20
Recognition of others' feelings (OthEm)								
Group	Pretest			Posttest			Follow-up-Test	
	n	MW	SD	n	MW	SD	n	SD
EG	24	-0.16	1.17	24	-0.01	1.34	23	-0.12 1.30
CG	23	0.42	1.02	23	0.40	1.04	21	0.40 1.26
Regulation of one's own feelings (RegEm)								
Group	Pretest			Posttest			Follow-up-Test	
	n	MW	SD	n	MW	SD	n	SD
EG	24	0.05	1.04	24	0.34	0.79	23	0.36 0.90
CG	23	0.16	0.96	23	0.08	0.82	21	0.10 1.11

Expression of feelings as emotional expressiveness (ExpEm)								
Group	Pre-test			Post-test			Follow-up test	
	n	MW	SD	n	MW	SD	n	SD
EG	24	-0.17	1.06	24	0.02	1.02	23	0.05 0.96
CG	23	-0.22	1.10	23	-0.26	1.11	21	-0.25 1.11
Total emotional competence value (Total)								
Group	Pre-test			Post-test			Follow-up test	
	n	MW	SD	n	MW	SD	n	SD
EG	24	-0.11	0.80	24	0.09	0.61	23	0.13 0.62
CG	23	0.06	0.67	23	0.04	0.71	21	0.03 0.92

Regarding the main scales RegEm, ExpEm, and the total value of general emotional competence, a significant interaction effect of time of measurement * group membership became apparent (table 2). This can also be used to document the effectiveness of the intervention. To examine the differences within the EG among the individual times of measurement of the corresponding scales for significance, post-hoc tests with Bonferroni correction were carried out (Döring & Bortz, 2016). The test showed for the RegEm scale that the mean value of the pre-test differed significantly from the mean value of the post-test ($p = 0.032$) and the follow-up test ($p = 0.046$). However, the difference between post-test and follow-up test was not significant. The mean values of the ExpEm scale just tended to be slightly significant only between pre-test and follow-up test ($p = 0.092$). Slight significance was recorded between pre- and post-test ($p = 0.072$) and significance was proven between pre-test and follow-up test ($p = 0.010$) for the total value of general emotional competence, which is calculated based on the values of all scales used. Differences between post-test and follow-up test again were not significant.

Tab. 2: Results of the variance analyses with repeated measurement

	Inter-subject effects	Intra-subject effects	
	F value (p) MEgroup	F value (p) MEtime of measurement	F value (p) IE time of measurement * group
OwnEm	0.135 (0.716)	1.098 (0.169)	1.624 (0.102)
OthEm	2.593 (0.115)	0.371 (0.346)	0.358 (0.350)
RegEm	0.143 (0.707)	1.143 (0.159)	3.009 (0.032*)
ExpEm	0.205 (0.653)	0.496 (0.306)	2.556 (0.042*)
Total	0.058 (0.819)	1.655 (0.099)	4.106 (0.010*)

F value Test value, pSignificance value, ME Main effect, IE Interaction effect, * Significance

Discussion

This study examined the extent to which participation in a body-related intervention program leads to an improvement of emotional competence in female students. The intervention program was transferred from child and adolescent psychiatry, psychotherapy, and psychosomatics. The evaluation showed no significant group differences at any of the three times of measurement.

To evaluate the effectiveness of the body-related program to promote emotional competence, the interaction effects of the two main effects "group membership" and "time of measurement" were checked for significant interrelations. Significant interaction effects of time of measurement and group membership were determined regarding the main scales of the "ability to regulate one's own feelings" and the "ability to express feelings as emotional expressiveness", as well as the total value of general emotional competence. Since the interaction of factors is significant, it was proven that the main effects of the "time of measurement" factor (with repeated measurement) do not occur at all levels of the "group membership" factor. Consequently, the changes of the relevant scale values over the times of measurement differ between the two groups (EG and CG). This proves the effectiveness of the intervention in physical education regarding the scales mentioned. However, it is important to consider that a significant improvement of the total value of the ESCQ was found only between pre-test and follow-up test. It seems that further development, even if not significant, takes place in the students even after the program was terminated. Similar results were identified by Marées and Petermann (2009). Their study involving elementary school children additionally showed an increase in social-emotional skills between post-test and follow-up test. This could be caused by the fact that occupation with one's own emotional experiences requires some time and learning experiences, which extend beyond the period of the intervention. Schick and Cierpka (2003) came to similar conclusions based on the data of their evaluation study on "Faustlos" (promotion of social-emotional competence in elementary school children). Therefore, the program appears to have resulted in a sustainable improvement of emotional competence in the students who participated. If emotional competence is further differentiated in terms of the four scales that were applied, the following emerges: The intervention leads to an immediate and sustainable positive effect on emotional regulatory ability of the EG when compared to the CG. The pro-

gram did not, however, result in any obvious immediate or sustainable change regarding the other scales, i.e., the abilities to recognize one's own feelings, to recognize others' feelings, and to express feelings as emotional expressiveness.

Since this intervention study was conducted within a physical education class with female adolescents between 13 and 14 years of age, laboratory conditions could not be expected. This means that a reduction of internal validity in favor of external validity had to be accepted. The fact that this is a random sample that does not meet the requirement to be representative is a point of criticism of the examination. To increase its generalizability, a larger sample and different types of school and ages would have had to be involved. The lack of opportunity to create similar initial situations for both groups was another factor that limited the internal validity because alternative explanations cannot be completely excluded that way. Different emotional strain of the students, and the continuous confrontation and mental occupation with the topic during the intervention period could have led to distorted responses. It is, however, impossible to assess the extent to which the data collection was distorted by emotional strain and what any possible effect would have looked like. It is also important to observe that the results relate to female students, and that gender-specific differences might be presumed pertaining to the experiencing of emotions, especially in puberty and within the context of athletic activity (Stapley & Haviland, 1989). Therefore, the results cannot simply be transferred to male students.

Conclusions

The results of the study mostly confirm the effectiveness of a body-related program to promote emotional competence. In the end, however, the results must not be over interpreted because limitations and disturbance factors must be considered due to the explorative character and field design. A replication with experimental character is definitely desirable. It seems plausible that further studies should include the consideration of risk factors, such as externalizing behavioral disorders, migration background, or social status, as well as male subjects.

REFERENCES

- Berking, M., Wupperman, P., Reichardt, A., Pejic, T., Dippel, A., & Znoj, H. (2008). Emotion-regulation skills as a treatment target in psychotherapy. *Behaviour Research and Theory*, 46(11), 1230-1237.
- Bohus, M., & Wolf-Arehult, M. (2014). *Interaktives Skillstraining für Borderline-Patienten. Das Therapeutenmanual*. Stuttgart: Schattauer.
- Carlson, N., & Bortz, J. (2016). *Physiologische Psychologie* (Vol. 8., aktualisierte Auflage). München, Bosten, San Francisco u.a.: Pearson Studium.
- Döring, Nicola, & Bortz, Jürgen. (2016). *Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften* (Vol. 4., überarbeitete Auflage). Heidelberg: Springer.
- Fleischhaker, C., Sixt, B., & Schulz, E. (2010). *DBT-A. Dialektisch-behaviorale Therapie für Jugendliche. Ein Therapiemanual mit Arbeitsbuch auf CD*. Berlin, Heidelberg: Springer-Verlag.
- Fox, E. (2008). *Emotion science. An integration of cognitive and neuroscience approaches*. Basingstoke: Palgrave Macmillan.
- Gerrig, R. J., & Zimbardo, P. G. (2014). *Psychologie* (Vol. 20., aktualisierte Auflage). München: Pearson.
- Götz, T., Frenzel, A. C., Pekrun, R., & Hall, N. (2006). Emotionale Intelligenz im Lern- und Leistungskontext. In R. Schulze, P. A. Freund & R. D. Roberts (Eds.), *Emotionale Intelligenz: Ein Internationales Handbuch* (pp. 237-256). Göttingen: Hogrefe.
- Hascher, T. (2005). Emotionen im Schulalltag: Wirkungen und Regulationsformen. *Zeitschrift für Pädagogik*, 51, 610-625.
- Hölling, H., Schlack, R., Petermann, F., Ravens-Sieberger, U., & Mauz, E. (2014). Psychische Auffälligkeiten und psychosoziale Beeinträchtigungen bei Kindern und Jugendlichen im Alter von 3 bis 17 Jahren in Deutschland - Prävalenz und zeitliche Trends zu 2 Erhebungszeitpunkten (2003-2006 und 2009-2012). Ergebnisse der KiGGS-Studie - Erste Folgebefragung (KiGGS Welle 1). *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*, 57(7), 807-819.
- Lammers, C.-H. (2011). *Emotionsbezogene Psychotherapie. Grundlagen, Strategien und Techniken* (Vol. 2., vollständig überarbeitete und erweiterte Auflage). Stuttgart: Schattauer.
- Marées, N. von, & Peter, F. (2009). Förderung sozial-emotionaler Kompetenzen im Grundschulalter. *Kindheit und Entwicklung*, 18(4), 244-253. doi: 10.1026/0942-5403.18.4.244
- Mees, U. (2006). Zum Forschungsstand der Emotionspsychologie - eine Skizze. In R. Schützzeichel (Ed.), *Emotionen und Sozialtheorie. Disziplinäre Ansätze* (pp. 104-123). Frankfurt am Main: Campus.
- Pekrun, R., Goetz, T., & Titz, W. (2002). Academic Emotions in Students' Self-Regulated Learning and Achievement: A Program of Qualitative and Quantitative Research. *Educational Psychologist*, 37(2), 91-10.
- Petermann, Franz, & Kullik, Angelika. (2011). Frühe Emotionsdysregulation: Ein Indikator für psychische Störungen im Kindesalter? *Kindheit und Entwicklung*, 20(3), 186-196. doi: 10.1026/0942-5403/a000055
- Ravens-Sieberger, U., Wille, N., Bettge, S., & Erhart, M. (2007). Psychische Gesundheit von Kindern und Jugendlichen in Deutschland. Ergebnisse aus der BELLA-Studie im Kinder- und Jugendsurvey (KiGGS). *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*, 50(5-6), 871-878.
- Rindermann, H. (2009). *EKF. Emotionale-Kompetenz-Fragebogen*. Göttingen: Hogrefe.
- Schick, A., & Cierpka, M. (2003). *Faustlos: Evaluation eines Curriculums zur*

Förderung sozial-emotionaler Kompetenzen und zur Gewaltprävention in der Grundschule. *Kindheit und Entwicklung*, 12(2), 100-110.

- Schlack, R., Kurth, B., & Hölling, H. (2008). Die Gesundheit von Kindern und Jugendlichen in Deutschland - Daten aus dem bundesweit repräsentativen Kinder- und Jugendgesundheitsurvey (KiGGS). *Umweltmedizin in Forschung und Praxis*, 13(4), 245-260.
- Seel, N. M., & Hanke, U. (2015). *Erziehungswissenschaft*. Berlin, Heidelberg: Springer.
- Stapley, J. C., & Haviland, J. M. (1989). Beyond depression: Gender differences in normal adolescents' emotional experiences. *Sex roles*, 20(5-6), 295-308.
- Webster-Stratton, C. H., Reid, M. J., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 40(2), 91-203.